

In addition to the drawbar assembly, two separate one-inch link safety chains independently connect the brakecar and mancar.

10. The steel drawbar assembly existent at the time the citation was written is estimated to be capable of withstanding a load of fifty tons. ^{1/} The safety chains, whose purpose is to keep the two cars connected in the event the drawbar or one of the pins should fail, can withstand eighteen tons of stress on each chain.

11. The brakecar weighs approximately 13,500 pounds and the mancar weighs 11,280 pounds. Thus, the total weight of the empty mantrip is 24,780 pounds. When fully loaded with 52 men (assuming 200 pounds per man), the mantrip will weigh an additional 10,400 pounds or approximately 35,180 pounds total. When the fully loaded mantrip is on the 16-degree slope track, however, resolution of the force of gravity into two components determines that 72.5% of the total weight acts perpendicular to the surface of the slope and is absorbed by the slope track leaving only 27.5% or approximately 5 tons of dead weight acting parallel to the slope and pulling on the hoist rope that is capable of supporting fifty tons.

12. When fully loaded (at 200 pounds per man) the mancar weighs 17,680 pounds. On the 16 degree slope track, the perpendicular component of gravity again absorbs 72.5% of the total weight. Thus the actual weight drawing on the pin and drawbar coupling assembly between the cars is approximately 5,000 pounds or 2.5 tons of dead weight pulling on a drawbar capable of supporting fifty tons.

13. The mantrip, in its existing configuration, was placed in service in late 1972. Since that time, the instant citation is the only one written by MSHA for the alleged failure of this equipment to meet the cited mandatory standard. In that time there has never been an accident involving the cable attachment or the coupling assembly between the cars. Nor have the brakes ever failed.

V Because the manufacturer could not define with certainty the steel characteristics of the existing drawbar and pins, Rushton has purchased a new drawbar and new pins. The load capacity of the new drawbar is 405,000 pounds or 202.5 tons. The new 2-1/4 inch pin has a load capacity of 248,125 pounds or 124.06 tons and the new 2-1/2 inch pin a load capacity of 306,875 pounds or 153.43 tons.